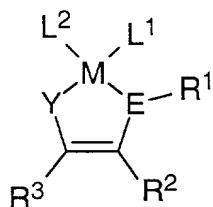


Claims

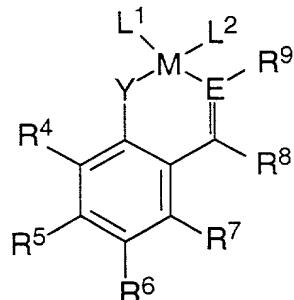
1. Process for the production of aqueous polymer dispersions by
 5 the reaction of one or more olefinically unsaturated
 compounds [olefin(s)] in aqueous medium in the presence of

a1) a complex compound of the general formula Ia and/or Ib

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Ia

Ib

20 in which the substituents and indices have the following meaning:

M a transition metal of groups 7 to 10 of the periodic system of the elements,

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L¹ phosphanes $(R^{16})_xPH_{3-x}$ or amines $(R^{16})_xNH_{3-x}$ having identical or different substituents R¹⁶, ethers $(R^{16})_2O$, H_2O , alcohols $(R^{16})OH$, pyridine, pyridine derivatives of the formula $C_5H_{5-x}(R^{16})_xN$, CO, C_1-C_{12} alkyl nitriles, C_6-C_{14} aryl nitriles or ethylenically unsaturated double-bonded systems, x standing for an integer between 0 and 3,

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L² halide ions, amide ions $(R^{16})_hNH_{2-h}$, h standing for an integer between 0 and 2, and furthermore C_1-C_6 alkyl anions, allyl anions, benzyl anions or aryl anions,

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wherein L¹ and L² can be linked to one another by means of one or more covalent bonds,

E nitrogen,

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Y oxygen, sulfur, $N-R^{10}$ or $P-R^{10}$,

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R¹ hydrogen, C₁-C₁₂ alkyl groups, C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,

5 R², R³ independently of one another
hydrogen,
C₁-C₁₂ alkyl, wherein the alkyl groups can be branched or unbranched,
C₁-C₁₂ alkyl, singly or multiply substituted by identical or different C₁-C₁₂ alkyl groups,
10 halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thioether groups,
C₇-C₁₃ aralkyl,
C₃-C₁₂ cycloalkyl,
C₃-C₁₂ cycloalkyl, singly or multiply substituted by identical or different C₁-C₁₂ alkyl groups,
15 halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thioether groups,
C₆-C₁₄ aryl,
C₆-C₁₄ aryl, identically or differently substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups,
20 C₁-C₁₂ alkoxy groups,
silyloxy groups OSiR¹¹R¹²R¹³,
halogens or
amino groups NR¹⁴R¹⁵,
25 wherein the substituents R² and R³ can form a saturated or unsaturated 5- to 8-membered ring with one another,
30 R⁴ to R⁷ independently of one another
hydrogen,
35 C₁-C₁₂ alkyl, wherein the alkyl groups can be branched or unbranched,
C₁-C₁₂ alkyl, singly or multiply substituted by identical or different C₁-C₁₂ alkyl groups,
halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thioether groups,
40 C₇-C₁₃ aralkyl,
C₃-C₁₂ cycloalkyl,
C₃-C₁₂ cycloalkyl, singly or multiply substituted by identical or different C₁-C₁₂ alkyl groups,
45 halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thioether groups,
C₆-C₁₄ aryl,

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5 C₆-C₁₄ aryl, identically or differently substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups,
10 C₁-C₁₂ alkoxy groups,
 silyloxy groups OSiR¹¹R¹²R¹³,
 halogens,
15 NO₂ groups or
 amino groups NR¹⁴R¹⁵,
 wherein pairs of neighboring substituents R⁴ to R⁷ can form a saturated or unsaturated 5- to 8-membered ring with one another,
20 R⁸, R⁹ independently of one another
 hydrogen,
 C₁-C₆ alkyl groups,
 C₇-C₁₃ aralkyl substituents or
 C₆-C₁₄ aryl groups, optionally substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³,
 amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups,
25 R¹⁰ to R¹⁵ independently of one another
 hydrogen,
 C₁-C₂₀ alkyl groups, which on their part may be substituted by O(C₁-C₆ alkyl) or N(C₁-C₆ alkyl)₂ groups,
30 C₃-C₁₂ cycloalkyl groups,
 C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
35 R¹⁶ hydrogen,
 C₁-C₂₀ alkyl groups, which for their part may be substituted by O(C₁-C₆ alkyl) or N(C₁-C₆ alkyl)₂ groups,
 C₃-C₁₂ cycloalkyl groups,
40 C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
45 b) dispersing agents and optionally
 c) organic solvents having low solubility in water,

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d) the metal complexes a1) being dissolved in a portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water and

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e) the portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water which holds the metal complexes a1) in solution being present in the aqueous medium as a dispersed phase having an average droplet diameter \leq 1,000 nm.

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2. Process as claimed in claim 1, wherein the metal complex a1) is used in combination with an activator a2).

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3. Process as claimed in any of claims 1 or 2, wherein an electrically neutral nickel complex compound is used as the complex compound of the general formula I a and/or I b.

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4. Process as claimed in any of claims 2 or 3, wherein the activator a2) is an olefin complex of rhodium or nickel.

5. Process as claimed in any of claims 1 to 4, wherein ethylene is used exclusively as olefin.

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6. Process as claimed in any of claims 1 to 4, wherein at least two olefins selected from the group comprising ethylene, propylene, 1-butene, 1-hexene and styrene are used.

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7. Process as claimed in claim 6, wherein ethylene is used in combination with propylene, 1-butene, 1-hexene or styrene.

8. Process as claimed in any of claims 1 to 7, wherein anionic, cationic and/or nonionic emulsifiers are employed as the dispersing agents b).

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9. Process as claimed in any of claims 1 to 8, wherein aliphatic and aromatic hydrocarbons, fatty alcohols and/or fatty acid esters are used as the organic solvents c).

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10. Process as claimed in any of claims 1 to 9, wherein the portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water which contains the metal complexes a1) in solution and which is present in the aqueous medium as a dis-

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perse phase having an average droplet diameter \leq 1,000 nm
contains further components.

11. Aqueous polymer dispersion prepared by a process as claimed
5 in any of claims 1 to 10.
12. Use of an aqueous copolymer dispersion as claimed in claim 11
as binding agent in adhesives, sealing compounds, plastic
plasters and surface coatings.

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